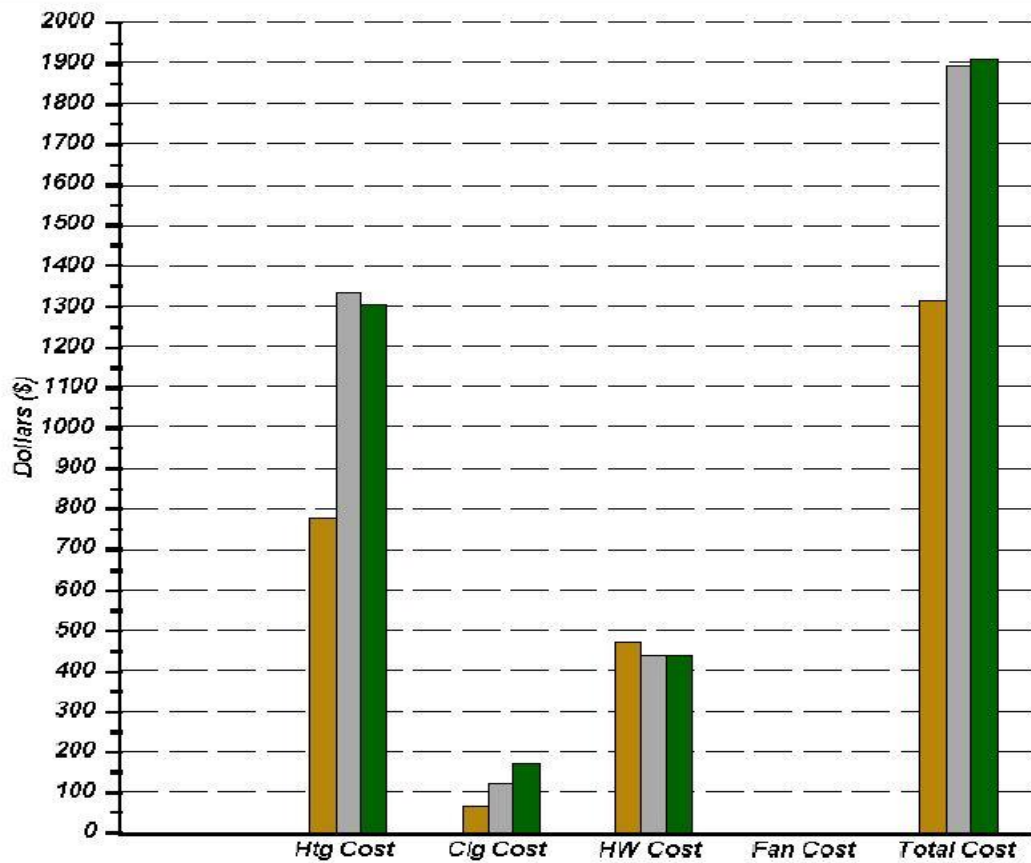


A study was conducted that compared various methods of space heating/cooling and water heating. The three systems included a ground source (geothermal) system that also heated domestic water, a cold climate air source heat pump in conjunction with a gas water heater, and a natural gas furnace with electric air conditioner combination.

On a monthly basis, all three systems cost about the same to own and operate. The big difference is the amount of greenhouse gas emissions. Burning fossil fuels is much worse than using electricity.

ANNUAL OPERATING COST

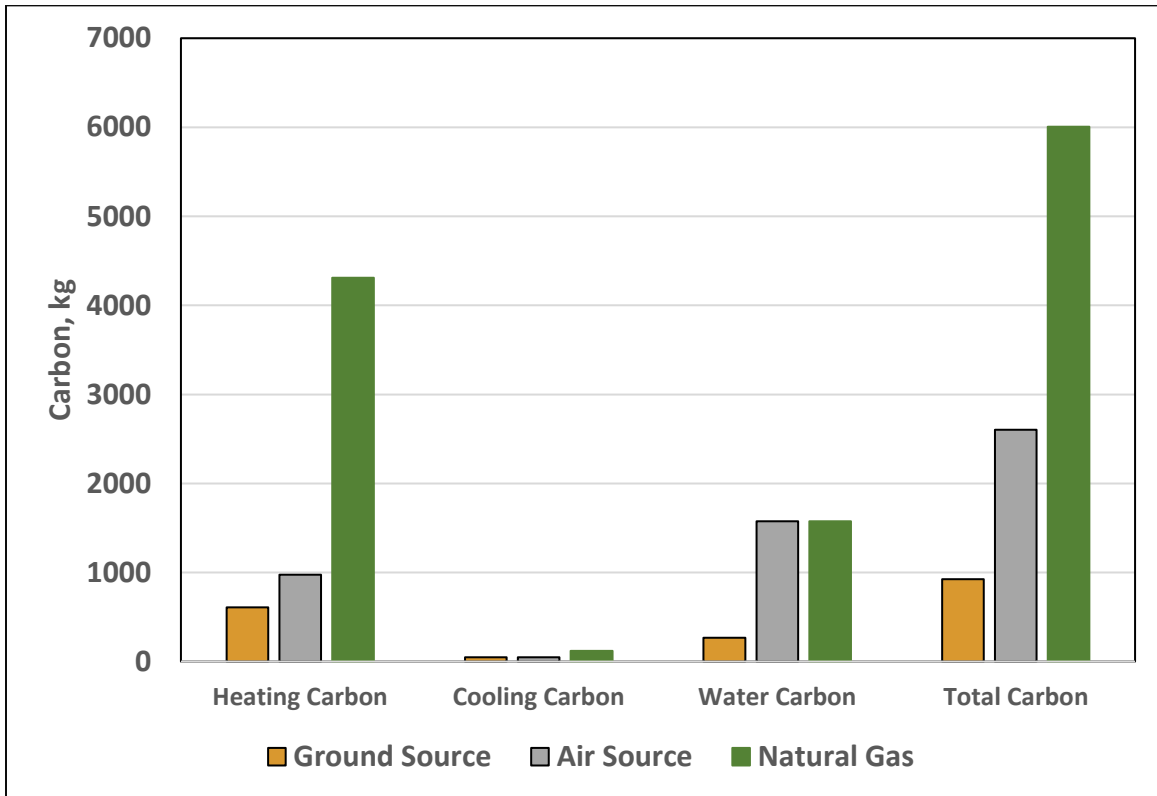


- Ground Source Heat Pump (geothermal) and Dual Electric Water Heater
- Air Source Heat Pump and Gas Water Heater
- Gas Furnace, Electric A/C and Gas Water Heater

CAPITAL AND TOTAL COSTS

Item	Ground Source	Air Source	Natural Gas
Heat Pump	\$7,700	\$13,000	0
Ground Loop	\$15,000	0	0
Water Heater	\$300	\$800	\$800
Furnace	0	0	\$6,000
Air Conditioner	0	0	\$1,700
Total	\$23,000	\$13,800	\$8,500
Annual Operating	\$1310	\$1890	\$1910
Financing cost	\$1019	\$611	\$377
Total Annual Cost	\$2329	\$2501	\$2287

CARBON PRODUCTION



System	Ground Source	Air Source	Natural Gas
Heating kWh	6078	9755	23294
Heating Carbon	608	976	4309
Cooling kWh	466	495	1190
Cooling Carbon	47	50	119
Water kWh	2693	8526	8526
Water Carbon	269	1577	1577
Total Carbon, kg	924	2603	6005
% of Gas	15%	43%	100%

